wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

159. (Amended) A method of operating an optical disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

E19 cont.

REMARKS

At the outset, Applicants wish to thank the Examiner for the consideration given the present application.

The Examiner's Office Action dated July 11, 2001, has been received and its contents reviewed. Claims 1-6, 8-20, 22-34, 36-48, and 50-167 are pending in the present application, of which claims 1, 8, 15, 22, 29, 36, 43, 50, 57-60, 68-71, 79-82, 90-93, 101-104, 112-115, 123-126, 134-137, 145-148, and 156-159 are independent.

Referring now to the Office Action, claims 1-6, 8-20, 22-34, 36-48, and 50-167 are rejected under 35 U.S.C. § 112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. In response, Applicants have amended all pending independent claims to further specify that the hard-carbon coating is an outermost layer of the disk, as suggested by the Examiner. Accordingly, the § 112, second paragraph, rejection is respectfully requested to be reconsidered and withdrawn.

In Section 4, page 2, of the Office Action, claims 101, 103, 105-107, 109, 110, 112, 114, 116-118, 120, 121, 123, 125, 127-129, 131, 132, 134, 136, 138-140, 142, 143, 145, 147, 149-151, 153, 154, 156, 158, 160-162, 164, and 165 are rejected under 35 U.S.C. § 103(a) as unpatentable over JP 02-058744 (hereafter JP '744); in Section 5, page 4 of the Office Action,

claims 101, 103, 105-107, 109, 110, 112, 114, 116-118, 120, 121, 123, 125, 127-129, 131-132, 134, 136, 138-140, 142, 143, 145, 147, 149-151, 153, 154, 156, 158, 160-162, 164, and 165 are rejected under 35 U.S.C. § 103(a) as unpatentable over JP '744, further in view of Marchant ("Optical Recording: A Technical Overview", pp 132-139, 1990); in Section 6, page 5 of the Office Action, claims 101-107, 109-118, 120-129, 131-140, 142-151, 153-162, and 164-166 are rejected under 35 U.S.C. § 103(a) as unpatentable over JP '744, in view of Marchant combined with Shinohara (JP 01-184722) or Kitoh et al. ('850); in Section 7, page 6 of the Office Action, claims 101, 103, 105-110, 112, 114, 116-121, 123, 125, 127-132, 134, 136, 138-143, 145, 147, 149-154, 156, and 158-165 are rejected under 35 U.S.C. § 103(a) as unpatentable over JP '744, in view of Ikoma et al. ('829); in Section 8, page 7 of the Office Action, claims 1-6, 15-20, 29-34, 43-49, 57, 59, 61-66, 68, 70, 72-77, 79, 81, 83-88, 90, 92, 94-99, 34, 36, 38-143, 145, 147, 149-154, 156, 158, and 160-165 are rejected under 35 U.S.C. §103(a) as unpatentable over Miyamoto (JP 04-219647) or Hirayama (JP 04-219647) in view of Ikoma combined with either Shinohara or Murai et al. ('132); in Section 9, page 8 of the Office Action, claims 1-6, 8-20, 22-34, 36-48, 50-100, and 134-166 are rejected under 35 U.S.C. §103(a) as unpatentable over Miyamoto (JP 04-219647) or Hirayama et al. (JP 04-355228) combined with Ikoma and either Shinohara or Murai et al., further in view of Shinohara (JP 01-184722) or Kitoh; in Section 10, page 9 of the Office Action, claims 1-6, 15-20, 29-34, 43-48, 57, 59, 61-66, 68, 70, 72-77, 79, 81, 83-88, 90, 92, 94-99, 134, 136, 138-143, 145, 147, 149-154, 156, 158, and 160-165 are rejected under 35 U.S.C. §103(a) as unpatentable over Brezoczky et al. ('229), in view of Ikoma combined with Shinohara (JP 63-275037) or Murai et al.; in Section 11, page 10 of the Office Action, claims 1-6, 8-20, 22-34, 36-48, 50-100, and 134-166 are rejected under 35 U.S.C. §103(a) as unpatentable over Brezoczky et al. ('229), in view of Ikoma combined with Shinohara et al. (JP 63-275037) or Murai et al. and either Shinohara (JP 01-184722) or Kitoh; in Section 12, page 10 of the Office Action, claims 1-6, 15-20, 29-34, 43-48, 57, 59, 61-66, 101, 103, 105-110, 112, 114, 116-121, 123, 125, 127-132, 134, 136, 138-143, 145, 147, 149-154, 156, 158, and 160-165 are rejected under 35 U.S.C. §103(a) as unpatentable over Amata et al. (JP 04-230034), in view of Ikoma et al. ('829) combined with Shinohara et al. (JP 63-275037) or Murai et al.; in Section 13, page 11 of the Office Action, claims 1-6, 20, 22-34, 36-48, 50-68, and 101-166 are rejected under 35 U.S.C. §103(a) as unpatentable over Amata et al., in view of Ikoma et al.

combined with Shinohara et al. (JP 63-275037) or Murai et al. These rejections are respectfully traversed at least for the reasons provided below.

In Section 4 of the Office Action, wherein the claims are rejected under 35 U.S.C. §103(a) over JP 2-058744, the Examiner again holds onto the basis of the high resistance to degradation, which would have to occur through holes in the carbon film, for over 1000 hours that any pin-holing in the film would be below the recited limit of the claim, and the Examiner further asserts that the issue is that to protect the aluminum layer for 1000 hours the permeability of the carbon film must be small and, therefore, the pin-holing is reasonably held to be below the recited limit of the claims. However, Applicants respectfully submit that the characteristic of the carbon film in JP '744 is not necessarily due to reduction of the pin-holing, insomuch as the carbon film-manufacturing process of JP '744 is apparently different from that of the present invention.

Furthermore, although the Examiner asserts that hardness indicates increased density and infers low pin-holing, it appears that the hardness is affected by composition of atoms and is not related to the pin-holing that is caused by charging up during formation of the carbon film. Thus, the characteristic of the carbon film in JP '744 is not related to the reduction of pin-holing. In view of the above, Applicants respectfully submit that the application of JP '744 in the §103(a) rejection is insupportable. Accordingly, Applicants respectfully request reconsideration and withdrawal of this §103(a) rejection.

With respect to the rejections recited in Sections 5-7 in the Office Action, Applicants respectfully submit that the above-submitted arguments relating to the JP '744 reference are also applicable to the §103(a) rejections in Sections 5-7 of the Office Action.

With respect to the rejection in Section 8 of the Office Action, the Examiner again asserts that it is well known to use the carbon film having excellent hardness, and denseness, and reduced defects such as those of Shinohara et al. or Murai et al. However, having reviewed both of Shinohara et al. and Murai et al., Applicants respectfully submit that the carbon film is provided on a ferromagnetic metal film that constitutes a magnetic recording medium, and that the production of an optical recording medium is not presupposed.

Therefore, Applicants respectfully submit that it would not be proper to combine Shinohara et al. or Murai et al. with the references relating to the optical recording medium, such

as Miyamoto and Hirayama, and that this rejection and the remaining rejections combined with Shinohara et al. or Murai et al. recited in paragraphs 9-13 of the Office Action are also improper.

In Sections 16 and 17, page 12, of the Office Action, claims 1-167 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as unpatentable over the claims of U.S. Patent No. 6,171,674; and, claims 1-167 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as unpatentable over the claims of copending Application No. 09/396,382. Applicants respectfully submit that these rejections are not appropriate, insomuch as these patents and application do not teach the operating method of the optical recording medium of the present invention.

In view of the foregoing arguments, Applicants respectfully request reconsideration and withdrawal of all the U.S.C. § 103(a) rejections.

CONCLUSION

Having responded to all rejections set forth in the outstanding Final Office Action, it is submitted that claims 1-6, 8-20, 22-34, 36-48, and 50-167 are now in condition for allowance. An early and favorable Notice of Allowance is respectfully solicited. In the event that the Examiner is of the opinion that a brief telephone or personal interview will facilitate allowance of one or more of the above claims, the Examiner is courteously requested to contact Applicants' undersigned representative.

Respectfully submitted,

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EJR:LCD:sbs

VERSION OF AMENDED CLAIMS
SHOWING CHANGES MADE

1. (Thrice Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less ,and wherein said hard-carbon coating is an outermost layer of the disk.

8. (Thrice Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

15. (Thrice Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

22. (Thrice Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

29. (Thrice Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having an wavelength of 700 to 800 nm onto said optical disk through said hard-carbon coating ;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

36. (Thrice Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having an wave length of 700 to 800 nm onto said optical disk through said hard-carbon coating ;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

43. (Thrice Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having an wave length of 700 to 800 nm onto said substrate through said hard-carbon coating ;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

50. (Thrice Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having an wave length of 700 to 800 nm onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

57. (Thrice Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

58. (Thrice Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

59. (Thrice Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

60. (Thrice Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

68. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

69. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less,

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

70. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

71. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

79. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having an wave length of 700 to 800 nm onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less.

80. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having an wave length of 700 to 800 nm onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less,

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

81. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having an wave length of 700 to 800 nm onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

82. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having an wave length of 700 to 800 nm onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

90. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

91. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less,

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

92. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

93. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less; wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

101. (Amended) A method of operating a compact disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

102. (Amended) A method of operating a compact disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less,

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

103. (Amended) A method of operating a compact disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

104. (Amended) A method of operating a compact disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

112. (Amended) A method of operating a compact disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having an wave length of 700 to 800 nm onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

113. (Amended) A method of operating a compact disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having an wave length of 700 to 800 nm onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less,

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

114. (Amended) A method of operating a compact disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having an wave length of 700 to 800 nm onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

115. (Amended) A method of operating a compact disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having an wave length of 700 to 800 nm onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

123. (Twice Amended) A method of operating a compact disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

124. (Amended) A method of operating a compact disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less,

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

125. (Amended) A method of operating a compact disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

126. (Amended) A method of operating a compact disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

134. (Amended) A method of operating an optical disk comprising the steps of:

introducing said optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less.

135. (Amended) A method of operating an optical disk comprising the steps of:

introducing said optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less,

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

136. (Amended) A method of operating an optical disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

137. (Amended) A method of operating an optical disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

145. (Amended) A method of operating an optical disk comprising the steps of:

introducing said optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having an wave length of 700 to 800 nm onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$.or less, and wherein said hard-carbon coating is an outermost layer of the disk.

146. (Amended) A method of operating an optical disk comprising the steps of:

introducing said optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having an wave length of 700 to 800 nm onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less,

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

147. (Amended) A method of operating an optical disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having an wave length of 700 to 800 nm onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

148. (Amended) A method of operating an optical disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having an wave length of 700 to 800 nm onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

156. (Amended) A method of operating an optical disk comprising the steps of:

introducing said optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

157. (Amended) A method of operating an optical disk comprising the steps of:

introducing said optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less,

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.

158. (Amended) A method of operating an optical disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating is an outermost layer of the disk.

159. (Amended) A method of operating an optical disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains at least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk.